

PRODUCT CHARACTERISTICS

V_{DS}	40V
$R_{DS(ON)-Typ}$ (at $V_{GS}=10V$)	18m Ω
$R_{DS(ON)-Typ}$ (at $V_{GS}=4.5V$)	22m Ω
I_D	10A

APPLICATIONS

Load Switch
PWM Application
Power Management

FEATURES

Advanced Trench Technology
Excellent $R_{DS(ON)}$ and Low Gate Charge
Lead Free

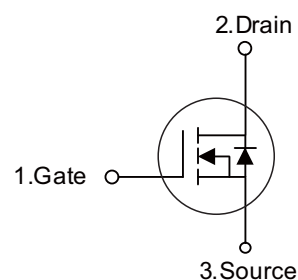
ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4523D	TO-252	2500 pieces /Reel
N/A	MOT4523C	TO-251	70 pieces/Tube

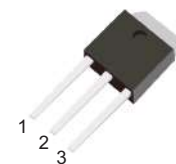
ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate -Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}C$	I_D	10
	$T_C=100^{\circ}C$	I_D	6
Pulsed Drain Current	I_{DM}	40	A
Single Pulsed Avalanche Energy	E_{AS}	30	mJ
Power Dissipation	P_D	5	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}C$

Symbol



TO-252



TO-251

■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	2	2.3	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 10A$	-	18	23	m Ω
		$V_{GS} = 4.5V, I_D = 5A$	-	22	27	m Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 20V,$ $f = 1MHz$	-	1342	-	pF
Output Capacitance	C_{oss}		-	87	-	pF
Reverse Transfer Capacitance	C_{rss}		-	72	-	pF
Total Gate Charge	Q_g	$V_{GS} = 0$ to 10V $V_{DS} = 20V, I_D = 10A$	-	26	-	nC
Gate Source Charge	Q_{gs}		-	6	-	nC
Gate Drain("Miller") Charge	Q_{gd}		-	5	-	nC
Switching characteristics						
Turn-On DelayTime	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 20V$ $I_D = 10A, R_{GEN} = 3\Omega$	-	7	-	ns
Turn-On Rise Time	t_r		-	11	-	ns
Turn-Off DelayTime	$t_{d(off)}$		-	26	-	ns
Turn-Off Fall Time	t_f		-	5	-	ns
Drain-source diode characteristics and maximum ratings						
Maximum Continuous Forward Current	I_S		-	-	10	A
Maximum Pulsed Forward Current	I_{SM}		-	-	40	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 10A$	-	-	1.2	V
Body Diode Reverse Recovery Time	trr	$I_F = 10A, di/dt = 100A/us$	-	10	-	ns
Body Diode Reverse Recovery Charge	Qrr		-	6	-	nC

■ TYPICAL CHARACTERISTICS

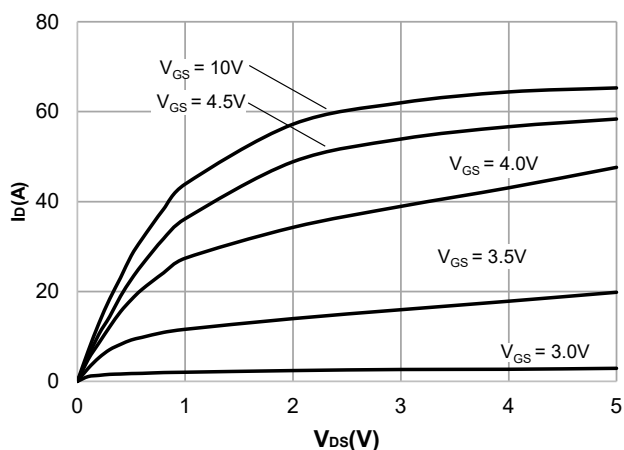


Figure 1: Output Characteristics

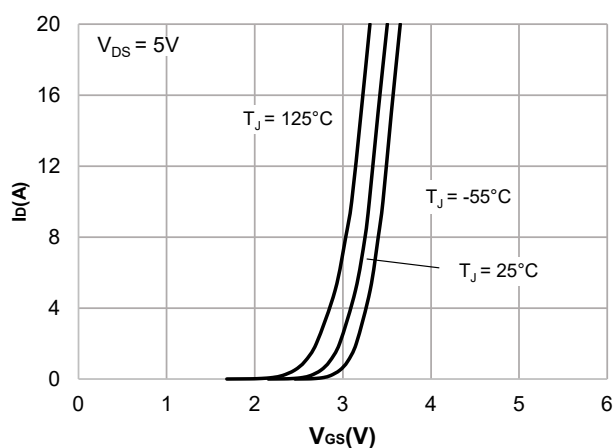


Figure 2: Typical Transfer Characteristics

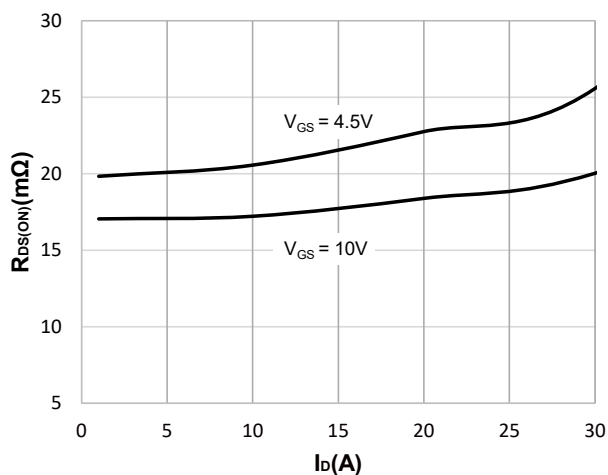


Figure 3: On-resistance vs. Drain Current

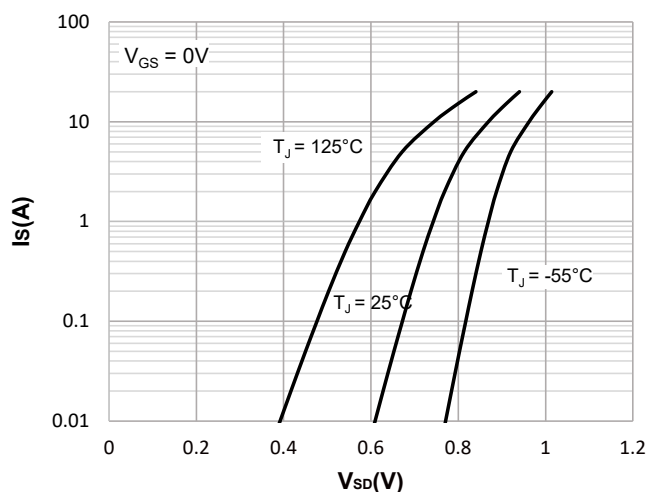


Figure 4: Body Diode Characteristics

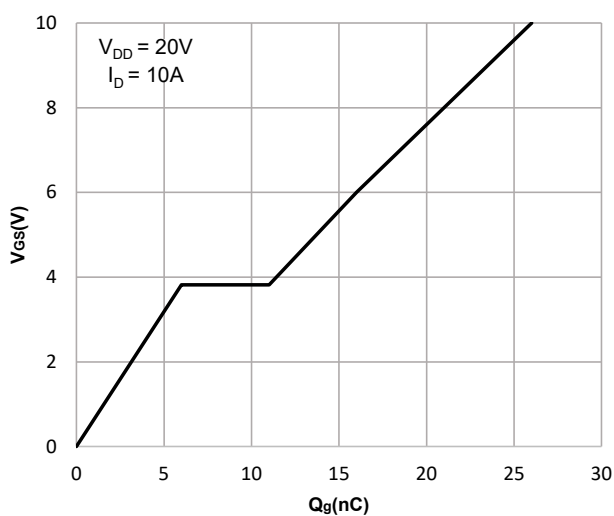


Figure 5: Gate Charge Characteristics

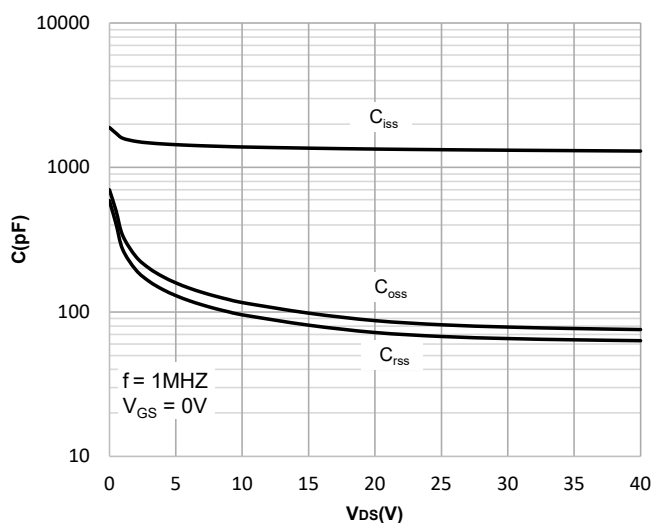


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

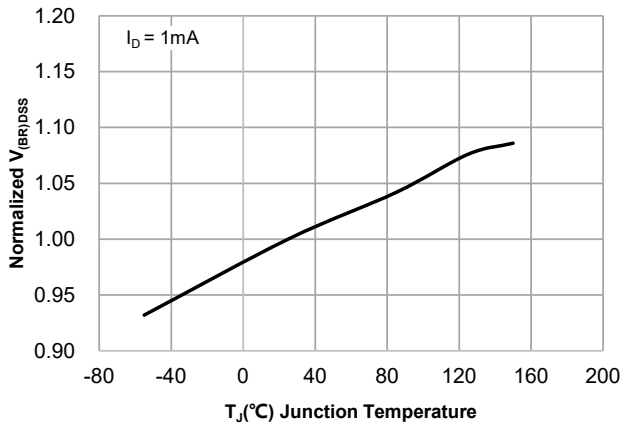


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

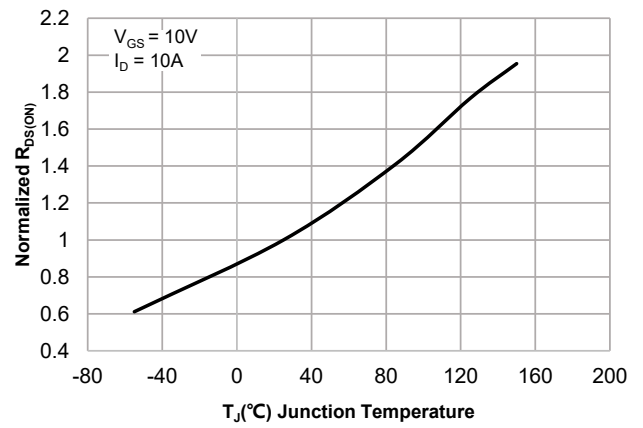


Figure 8: Normalized on Resistance vs. Junction Temperature

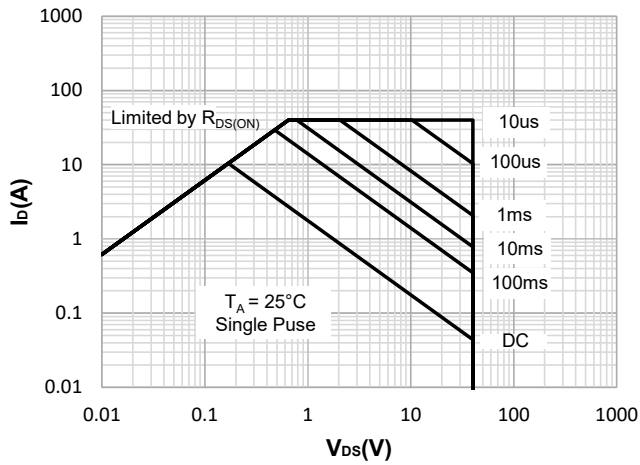


Figure 9: Maximum Safe Operating Area

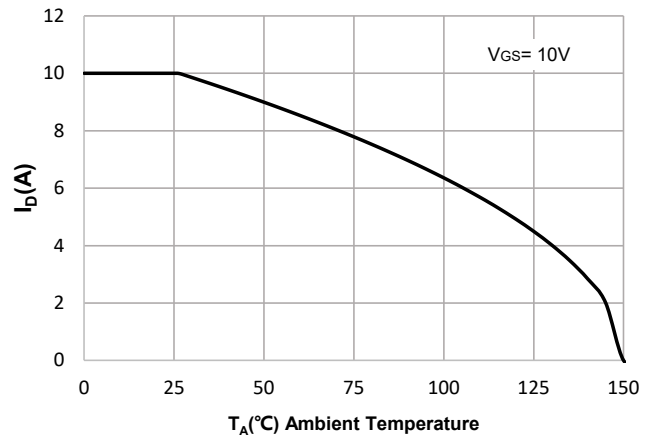


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

■ TO-252 PACKAGE OUTLINE DIMENSIONS

